Theatre Checklists - Routine & Emergency

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Although not a fan of ‘cookook medicine’, there is no doubt that checklists can help eliminate simple errors or oversight in even the most experienced doctor - particularly when task-loaded in an emergency. These checklists & aide memoires have been compiled from a variety of sources to be used in theatre or ED both routinely and in an evolving crisis.
<table>
<thead>
<tr>
<th>GENERAL PRINCIPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAPID SEQUENCE INTUBATION</td>
</tr>
<tr>
<td>OBESE / ASTHMA / DSI</td>
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<tr>
<td>DIFFICULT AIRWAY ALGORITHM</td>
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<tr>
<td>UNEXPLAINED HYPOXIA</td>
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<tr>
<td>ELEVATED or DECREASED ETCO2</td>
</tr>
<tr>
<td>ELEVATED AIRWAY PRESSURES</td>
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<tr>
<td>BRADYCARDIA</td>
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<tr>
<td>TACHYCARDIA</td>
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<tr>
<td>CARDIAC ARREST</td>
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<tr>
<td>MYOCARDIAL ISCHAEMIA</td>
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<tr>
<td>SEVERE HYPO- or HYPERTENSION</td>
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<tr>
<td>MAJOR HAEMORRHAGE</td>
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<tr>
<td>ANAPHYLAXIS</td>
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<tr>
<td>MALIGNANT HYPERTHERMIA</td>
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<tr>
<td>TURP SYNDROME</td>
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<tr>
<td>OBSTETRIC ANAESTHESIA</td>
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<tr>
<td>OBSTETRIC CRISIS</td>
</tr>
<tr>
<td>INFUSION PROTOCOLS</td>
</tr>
<tr>
<td>DRUG FORMULARY</td>
</tr>
<tr>
<td>KNOW, MODIFY and OPTIMISE THE ENVIRONMENT</td>
</tr>
<tr>
<td>------------------------------------------</td>
</tr>
<tr>
<td>establish protocols and procedures</td>
</tr>
<tr>
<td>ensure room set up is conducive to crisis - layout, equipment etc</td>
</tr>
<tr>
<td>how can things be improved (this includes equipment)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ANTICIPATE and PLAN FOR A CRISIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>patient - procedure - equipment - drugs - personnel - retrieval</td>
</tr>
<tr>
<td>- global plans</td>
</tr>
<tr>
<td>- specific plans</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>ENSURE LEADERSHIP and ROLE CLARITY</th>
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</thead>
<tbody>
<tr>
<td>assign leader</td>
</tr>
<tr>
<td>preferably not responsible for tasks ie: has an overview of the situation</td>
</tr>
<tr>
<td>leader decides, prioritises and assigns tasks to team</td>
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<table>
<thead>
<tr>
<th>COMMUNICATE EFFECTIVELY</th>
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</thead>
<tbody>
<tr>
<td>leadership and followership aided by clear communication</td>
</tr>
<tr>
<td>eye contact, use names, clear instructions, ensure understanding and report back</td>
</tr>
<tr>
<td>close the loop - upstream/downstream communication</td>
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<table>
<thead>
<tr>
<th>CALL FOR HELP or SECOND OPINION EARLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>call for help early - even if not in a crisis</td>
</tr>
<tr>
<td>second opinion may be reassurance enough or suggest alternatives</td>
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<tr>
<td>avoid therapeutic inertia</td>
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<table>
<thead>
<tr>
<th>ALLOCATE ATTENTION and USE AVAILABLE INFORMATION</th>
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<tbody>
<tr>
<td>fixation errors common</td>
</tr>
<tr>
<td>beware attentional tunnelling / situational overload</td>
</tr>
<tr>
<td>if you are stressed you are likely to be missing something</td>
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<table>
<thead>
<tr>
<th>DISTRIBUTE WORKLOAD and USE AVAILABLE RESOURCES</th>
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<tbody>
<tr>
<td>maintain situational awareness</td>
</tr>
<tr>
<td>delegate tasks, use external resources (telemedicine/retrieval)</td>
</tr>
<tr>
<td>if all else fails, think laterally - improvise/adapt/overcome</td>
</tr>
<tr>
<td>COVER</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Colour, Circulation, Capnography</td>
</tr>
<tr>
<td>BP, HR, Rhythm, ETCO2, SpO2, Colour</td>
</tr>
<tr>
<td>Ventilation &amp; Vaporisers</td>
</tr>
<tr>
<td>ETT tube &amp; Eliminate Machine</td>
</tr>
<tr>
<td>Review - Monitors &amp; Equipment</td>
</tr>
<tr>
<td>Airway (face or laryngeal mask), meticulous attention to ETT</td>
</tr>
<tr>
<td>Breathing (SV/IPPV)</td>
</tr>
<tr>
<td>Circulation, IV, Blood loss, ECG</td>
</tr>
<tr>
<td>Drugs - consider all given &amp; not given, check emergency drugs</td>
</tr>
<tr>
<td>Be Aware of Air and Allergy</td>
</tr>
<tr>
<td>Check Patient, Surgeon, Processes &amp; Responses</td>
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</tbody>
</table>

**SCARE**
- Colour
- Oxygen Supply & O2 Analyser
- Ventilation & Vaporisers
- ETT tube & Eliminate Machine
- Review - Monitors & Equipment
- Airway (face or laryngeal mask), meticulous attention to ETT
- Breathing (SV/IPPV)
- Circulation, IV, Blood loss, ECG
- Drugs - consider all given & not given, check emergency drugs
- Be Aware of Air and Allergy
- Check Patient, Surgeon, Processes & Responses

**SCAN**
- BP, HR, Rhythm, ETCO2, SpO2, Colour
- FIO2, Rotameter, O2 analyser matches FIO2
- Ventilation - RR, TV Vaporiser & Mix
- ETT position & security
- Able to Eliminate (bag)?
- Review monitors, update records, review equipment

**CHECK**
- Radial pulse, correlate, SPO2 dislodged?
- Increase FIO2, watch MAC
- Check circuit & vapouriser, ventilate by hand
- Distance in cm? Kinked? Bag and O2 available?
- Review monitors, review equipment - any changes?
- Observe & palpate neck, ETT position, cuff
- Observe, palpate & auscultate chest. ETCO2?
- Cross check BP, IV, losses & response to Rx/surgery
- Check drugs (error?) and patency IV line. Flushed?
- Question surgeon, review old Notes

**ALERT/READY**
- Allocate roles - IV access
- Increase FIO2, watch MAC
- Check circuit & vapouriser, ventilate by hand
- Distance in cm? Kinked? Bag and O2 available?
- Review monitors, review equipment - any changes?
- Observe & palpate neck, ETT position, cuff
- Observe, palpate & auscultate chest. ETCO2?
- Cross check BP, IV, losses & response to Rx/surgery
- Check drugs (error?) and patency IV line. Flushed?
- Question surgeon, review old Notes

**EMERGENCY**
- LARGE BORE IVs, FLUIDS, DEFIB, DRUGS
- HIGH FLOW OXYGEN
- AVOID AWARENESS
- VENTILATE BY BAG
- ENSURE ETT PLACED OR ALTERNATIVE
- DELEGATE OPERATION OF EQUIPMENT
- AIRWAY PATIENT & PROTECTED
- ADDRESS HYPOXIA, HYPOVENTILATION
- CRYSTALLOID, BLOOD VASOPRESSORS, CPR
- ATROPINE 10mcg/kg
- ADRENALINE 10mcg/kg
- MAINTAIN SITUATIONAL AWARENESS
- DEFINITIVE SURGERY OTHER CRISIS?
SAFE SURGERY CHECKLIST

BEFORE INDUCTION
Nurse & Anaesthetist

- Has patient confirmed identity, site, surgery and consent? Yes ☑
- Is the surgical site marked? Yes ☑ Not applicable ☐
- Is the anaesthetic machine & medication check complete? Yes ☑
- Are pulse oximeter, BP & ECG on the patient, functioning & acceptable? Yes ☑ Snapshot taken? ☐
- Does the patient have a known allergy? No ☑ Yes ☐
- Difficult airway or aspiration risk? No ☑ Yes ☐
- Risk > 500ml blood loss (7ml/kg children)? No ☑ Yes & 2 IVs sited, blood available ☐

BEFORE INCISION
Nurse, Surgeon & Anaesthetist

- Confirm all team members name & role
  - Yes ☑
- Confirm patient name & nature of surgery
  - Yes ☑ Not applicable ☐
- Confirm antibiotic prophylaxis given
  - Yes ☑

ANTICIPATED CRITICAL EVENTS
To Surgeon
- What are critical or non-routine steps? ☐
  - How long will case take? ☐
  - Anticipated blood loss? ☐
To Anaesthetist?
- Any patient-specific concerns? ☐
  - Eyes taped, pressure points protected? ☐
To Nursing Team
- Has sterility been confirmed? ☐
  - Any equipment issues or any concerns? ☐
  - Is appropriate imaging displayed? ☐

BEFORE LEAVE OT
Nurse, Surgeon & Anaesthetist

- Nurse verbally confirms:
  - Name of the procedure ☐
  - Equipment, sponge & sharp counts correct ☐
  - Specimens labelled? ☐
  - Any equipment issues arising? ☐

To surgeon, anaesthetist & nurse
What are the key concerns for this patient in recovery and ongoing management?

Recovery staff
- Patient awake & adequate ventilation? ☐
  - Drug chart completed? ☐
  - Antibiotics and analgesia addressed? ☐
  - DVT thromboprophylaxis? ☐
- Responsible Doctor identified & available? ☐
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

**Prepare Patient**
- Is position optimal?
  - ear to sternum
  - ramp if obese
  - MILS for trauma

- Is preoxygenation adequate?
  - apnoeic oxygenation ready with nasal specs high flow?

- Can this patient’s condition be optimised any further prior to intubation?
  - O2, Haemoglobin
  - Cardiac contractility, rate
  - Afterload, Preload
  - PEEP
  - IV access adequate & secure

- How will anaesthesia be maintained post induction?
  - vapourisers full & checked
  - adequate IV medications
  - pump sets available

**Prepare Equipment**
- Is patient monitoring applied, functioning and values acceptable?
  - SpO2
  - ECG
  - BP
  - ETCO2
  - BIS required?

- Is equipment checked and immediately available?
  - self-inflating bag
  - appropriate sized Guedel/NPO
  - laryngoscope working & spare
  - ET tube and alternatives
  - Suction
  - Bougie

- Do you have all the necessary drugs, including vasopressors?
  - Amnesic and/or Analgesic
  - Induction agent
  - Neuromuscular blockade

**Prepare Team**
- Delegate and brief team:
  - team leader
  - intubator
  - assistant
  - cricoid pressure / OELM
  - MILS
  - drug administration
  - extra assistance required

**Anticipate Problems**
- If airway is difficult, can we wake this patient?
  - Yes ☐ No ☐

- If intubation is difficult, how to maintain oxygenation?
  - Plan A - Intubate & Ventilate
  - Plan B - ILMA/ VL/Fibreoptic
  - Plan C - Oxygenation with BMV
  - Plan D - CiCO, Surgical Airway

- Is the necessary equipment immediately available?
  - Yes ☐ No ☐

**RAPID SEQUENCE INTUBATION**
- LEMON Assessment
  - Look - beard, no neck, dentition
  - Evaluate - thyromental distance
  - Mallampati score: I - IV
  - Obstruction or Obesity
  - Neck Movement - collar/arthritis

- awarenss, aspiration
- profound desaturation
- hypotension, arrhythmias
- patient positioning/transfer
- other?
Medications

<table>
<thead>
<tr>
<th></th>
<th>Normotensive Dose</th>
<th>Hypotensive Dose</th>
</tr>
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<tbody>
<tr>
<td>Ketamine</td>
<td>2 mg/kg</td>
<td>0.5 mg/kg</td>
</tr>
<tr>
<td>Propofol</td>
<td>1-3 mg/kg</td>
<td>0.25 mg/kg or ketamine</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>3 mcg/kg</td>
<td>consider if high ICP</td>
</tr>
<tr>
<td>Succinylcholine</td>
<td>1.5-2 mg/kg</td>
<td>2 mg/kg</td>
</tr>
<tr>
<td>Rocuronium</td>
<td>1.2 mg/kg</td>
<td>1.6 mg/kg</td>
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</tbody>
</table>

Roc 1.2 mg/kg - will give same intubating conditions as sux at 60s but not reversible & causes prolonged paralysis - consider RISK/BENEFIT

ADRENALINE ‘PUSH DOSE’

draw up 9ml N/saline in 10 ml syringe

to this, add 1ml of 1/10,000 (cardiac arrest) adrenaline

shake syringe hard & label as ‘ADRENALINE 10mcg/ml’

ADRENALINE INFUSION

6mg 1/1000 vial in 100ml N/saline at 2-20ml/hr - aim MAP 70

(use 3mg in 50ml syringe if using Niki T34L syringe driver)

RAPID SEQUENCE INTUBATION

SET UP

- Monitoring - BP, ECG, SpO2, ETCO2
- Nasal Cannulae at 15l/min PLUS Mask O2
- Pre-oxygenation for FOUR minutes
- Suction checked working & available
- Position optimised - ear-to-sternum
- Ramping needed?
- 360 degree access to patient & monitors visible
- Cricothyroid membrane palpated and marked

**IV & DRUGS**

- IV Cannula connected to fluid & running
- NIBP on contralateral arm and BP seen
- Spare cannula in situ
- INDUCTION AGENT drawn up, dose checked
- SUX or ROC drawn up, dose checked
- VASOPRESSORS drawn up, labelled
- POST INTUBATION drugs drawn up & labelled

**INTUBATION EQUIPMENT**

- BVM connected to oxygen
- PEEP valve for BVM available
- Oropharyngeal and 2 Nasopharyngeal Airways available
- Laryngoscope blade selected, light working
- ET tube size chosen, cuff tested
- Alternate tube size chosen & cuff tested
- 20ml Syringe for cuff inflation
- Stylet straight-to-cuff and/or Bougie with RapiFit connectors
- Gooseneck, filter, inline ETCO2 (or EasyCap)
- Tube ties & tape available
- Ventilator settings determined & set up

**TEAM BRIEF**

- Team roles allocated
- Anticipated difficult airway plan’s A/B/C/D discussed
- Agree prompts if SpO2 < 95% or > 3 intubation attempts
- Difficult airway kit immediately available & checked

Ask ‘who will be team leader’ & then perform a systematic check of each of following
# TRAUMA / CRITICALLY ILL PRE-RSI CHECKLIST

*(can do this whilst pre-oxygenating)*

## SET UP

<table>
<thead>
<tr>
<th>Item</th>
<th>Check</th>
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<tbody>
<tr>
<td>Monitoring - BP, ECG, SpO2, ETCO2</td>
<td></td>
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<tr>
<td>Nasal Cannulae at 15l/min PLUS Mask O2</td>
<td></td>
</tr>
<tr>
<td>Pre-oxygenation for FOUR minutes</td>
<td></td>
</tr>
<tr>
<td>Suction checked working &amp; available</td>
<td></td>
</tr>
<tr>
<td>Position optimised</td>
<td></td>
</tr>
<tr>
<td>Ramping needed?</td>
<td></td>
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## IV & DRUGS

<table>
<thead>
<tr>
<th>Item</th>
<th>Check</th>
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<tbody>
<tr>
<td>IV Cannula connected to fluid &amp; running</td>
<td></td>
</tr>
<tr>
<td>NIBP on contralateral arm and BP seen</td>
<td></td>
</tr>
<tr>
<td>Spare cannula in situ</td>
<td></td>
</tr>
<tr>
<td>INDUCTION AGENT drawn up, dose checked</td>
<td></td>
</tr>
<tr>
<td>SUX or ROC drawn up, dose checked</td>
<td></td>
</tr>
<tr>
<td>VASOPRESSORS drawn up, labelled</td>
<td></td>
</tr>
<tr>
<td>POST INTUBATION drugs drawn up &amp; labelled</td>
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## INTUBATION EQUIPMENT

<table>
<thead>
<tr>
<th>Item</th>
<th>Check</th>
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<tbody>
<tr>
<td>BVM connected to oxygen</td>
<td></td>
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<tr>
<td>PEEP valve for BMV available</td>
<td></td>
</tr>
<tr>
<td>Guedel airways &amp; two NPO airways available</td>
<td></td>
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<tr>
<td>Laryngoscope blade chosen, light working</td>
<td></td>
</tr>
<tr>
<td>ET tube size chosen, cuff tested</td>
<td></td>
</tr>
<tr>
<td>Alternate tube size chosen &amp; cuff tested</td>
<td></td>
</tr>
<tr>
<td>Syringe for cuff inflation</td>
<td></td>
</tr>
<tr>
<td>Stylet &amp; Bougie available</td>
<td></td>
</tr>
<tr>
<td>Gooseneck, filter, inline ETCO2 (or EasyCap)</td>
<td></td>
</tr>
<tr>
<td>Tube Tie available</td>
<td></td>
</tr>
<tr>
<td>Ventilator settings determined</td>
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</table>

## TEAM BRIEF

<table>
<thead>
<tr>
<th>Item</th>
<th>Check</th>
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<tbody>
<tr>
<td>In-line immobilisation person briefed</td>
<td></td>
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<tr>
<td>Cricoid pressure person briefed</td>
<td></td>
</tr>
<tr>
<td>Drug giver briefed</td>
<td></td>
</tr>
<tr>
<td>Anticipated difficult airway plan’s A/B/C/D discussed</td>
<td></td>
</tr>
<tr>
<td>Post RSI care brief &amp; maintenance of anaesthesia ready</td>
<td></td>
</tr>
<tr>
<td>Anaesthetic assistant ready</td>
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</tr>
<tr>
<td>DIFFICULT AIRWAY KIT AVAILABLE AND PREPARED TO USE IT?</td>
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</tbody>
</table>
VORTEX AIRWAY CHECKLIST

USE AS COGNITIVE AID IN AIRWAY PLANNING AND CRISIS MANAGEMENT

Start with whichever of the three non-surgical airway supports (mask, LMA, ETT) is appropriate.

No more than THREE attempts at each airway support technique (mask, LMA, ETT)

For each airway support, consider whether changes in the following will help:

- **Manipulation** (head/neck, larynx, device)  
  - Check

- **Adjuncts** (oro/nasopharyngeal airways, stylet/bougie, videolaryngoscope etc)  
  - Check

- **Size/Type**
  - Check

- **Suction**
  - Check

- **Pharyngeal muscle tone**
  - Check

The aim is to ensure alveolar oxygenation and allow the team to rapidly manage an airway crisis. Move from each of the three non-surgical options (BMV-LMA-ETT) attempting to remain in green zone and avoid deterioration into surgical airway as a rescue for ‘can’t intubate, can’t oxygenate’
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**PREOPERATIVE EVALUATION - SLEEP APNOEA & OTHER RISKS?**

### STOP-BANG > 5
- Snore loudly? Check
- Tired during daytime? Check
- Observed to stop breathing in sleep? Check
- Pressure high (BP)? Check

### OTHER
- BMI > 35? Check
- Age > 50? Check
- Neck circumference > 40cm? Check
- Gender male? Check

- poor functional capacity, abnormal ECG, uncontrolled BP/IHD, SpO2<94% air, previous DVT/PE, poorly controlled COPD or asthma
- Diabetes control

**OPERATIVE MANAGEMENT**

### CONSIDER
- Antacid prophylaxis? Check
- Pre-op analgesia? Check
- DVT prophylaxis? Check
- Careful glucose control? Check

### RAMPING
- Ear-to-sternum
- Reduces difficult ETT
- Improves ventilation

### TECHNIQUE
- Self-position on table
- Pre-oxygenate RAMPED
- Use PEEP valve on BMV
- Minimise induction-ventilation time
- Avoid spontaneous ventilation
- Desflurane if available or Propofol TCI
- Short-acting opioids
- Multimodal analgesia
- Ensure full reversal of NMB
- Extubate & recover head up
- Use IBW (except for sux)

### EQUIPMENT
- Bariatric trolley/personnel to lift Check
- Gel padding Check
- Large BP cough Check
- Ramping of patient (pillows) Check
- PEEP for Pre-Ox and BMV Check
- Pressure support ventilation Check

### IDEAL BODY WEIGHT
- Men
  - Height (cm) - 100
- Women
  - Height (cm) - 105

NB for Propofol Infusion, use Servin’s formula
Add 40% of excess weight to IBW
ie : IBW + 0.4(TBW-IBW)

**ANAESTHESIA for OBESE BMI > 35 kg/m2**
START HERE

Ask ‘who will be team leader’ & then perform a systematic check of each of following

B  Buy time
   Sit up, use non-rebreather, increase FiO2, NIV, PEEP (BMV or vent)

I  Indication
   Do we really need to intubate? Can it wait?
   Options : wait for help - videolaryngoscopy - iLMA or Proseal - awake intubation

G  Get help
   Extra hands. Talk to retrieval.

R  Ramp
   Use pillows, ear to sternum, flat on top - RAMP RAMP RAMP!

A  Apnoeic O2
   Oxygenation via nasal specs at 10-15 l/min during RSI

M  Minimal drugs
   Nebulise lignocaine & spray the cords!
   Ketamine/Propofol (100mg each in 20ml syringe)

P  Preoxygenate
   With NIV for 3-5 mins max

P  Paralysis
   Only if needed. Sux 1mg/kg or Roc 1.2mg/kg

P  Plan for failure
   Plan B - Plan C - Plan D (CICV)

P  Post intubation
   NGT, IDC, IV lines, central line / arterial line?
   sedation/paralysis for transfer
   paperwork for transfer

OBESE INTUBATION
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**STEP ONE**
Continuous nebulised salbutamol - use O2 not air for nebs
Nebulised ipratropium - 500mcg x3 20 minute, then hourly
Hydrocortisone 100mg IV (alternative DXM 20mg IV or IM)
MgSO4 2g (50mg/kg max 2g) IV - given over 20 minutes

*if no better, proceed to*

**STEP TWO**
Adrenaline 0.5 mg IM (0.01mg/kg) = 0.5ml of 1:1000
Fluid bolus 20 ml/kg
CXR, ECG, VBG, Electrolytes, FBC

*if no better, proceed to NIPPV*

**STEP THREE**

**AGITATED PATIENT**
ketamine 1.5 mg/kg IV over 30 s then 1 mg/kg/hr titrate to effect
if no IV, 5mg/kg IM

**IF WORSENING**
NIPPV
iPAP PS 8cm H2O
ePAP PEEP 3 cm H2O
continue nebs through NIPPV

**STEP THREE**

**COOPERATIVE PATIENT**
NIPPV
iPAP PS 8cm H2O
ePAP PEEP 3 cm H2O
continue nebs through NIPPV

**IF WORSENING**
ketamine 1.5 mg/kg IV over 30 s then 1 mg/kg/hr titrate to effect
if no IV, 5mg/kg IM

**Consider differential diagnoses**

*heart failure, ACS, arrhythmia*
*pulmonary embolism*
*PTX, pericardial tamponade, obstruction, foreign body anaphylaxis*

**AVOID INTUBATION IF POSSIBLE**

**BUT IF YOU HAVE TO INTUBATE**
Indications - fatigue, resp distress, deterioration, arrest
Maximise preoxygenation
Optimise first pass success
Largest ETT possible
Beware breath stacking
Ketamine 2mg/kg IV
Rocuronium 1.2 mg/kg or Sux 2mg/kg IV

Assist control / Volume control
RR 8 TV 5-7 ml/kg IBW
PEEP 2cm H2O IE 1:5 FiO2 100%
permissive hypercarbia
Ext chest compression
Pplat < 30cm H2O
Aggressive suctioning of ETT, check K NGT

**LIFE THREATENING ASTHMA**
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

**Plan A:**
- Initial tracheal intubation plan
  - Direct laryngoscopy
    - If failed intubation, proceed to:
      - Tracheal intubation

**Plan B:**
- Secondary tracheal intubation plan
  - ILMA™ or LMA™
    - If failed intubation, proceed to:
      - Confirm then fiberoptic tracheal intubation through ILMA™ or LMA™

**Plan C:**
- Maintenance of oxygenation, ventilation, postponement of surgery and awakening
  - Revert to face mask
    - Oxygenate & ventilate
      - If failed oxygenation, proceed to:
        - Postpone surgery
        - Awaken patient

**Plan D:**
- Rescue techniques for “can’t intubate, can’t ventilate” situation
  - LMA™
    - If improved oxygenation, proceed to:
      - Awaken patient
      - If increasing hypoxaemia,
        - Cannula cricothyroidotomy
        - or
        - Surgical cricothyroidotomy

**MAXIMUM THREE ATTEMPTS**
- Change position - Blade - Operator
- Use bougie - Consider stylet - VL

**SECONDARY INTUBATION PLAN**
- Intubating LMA (iLMA) - FastTrach or AirQ II
- KingVision Videolaryngoscope

**BAG MASK VENTILATION**
- Use Two Hands
- Can you wake the patient?

**RESCUE TECHNIQUES**
- Declare a CICO Emergency
- Continue to use LMA to attempt oxygenation
- Identify cricothyroid membrane
- Needle or Scalpel-Bougie-ETT Technique
- Frova (oxygenating bougie) O₂ at 2 l/min
**DIFFICULT AIRWAY - KIT CHECKLIST**

**PLAN A**
**TRACHEAL INTUBATION PLAN**
- max 3 attempts RSI
- max 4 attempts ELECTIVE

- Re-Position - Use a Bougie - Videolaryngoscope

**PLAN B**
**SECONDARY INTUBATION PLAN**
- not in RSI
- maintain oxygenation & ventilation

- ETT via iLMA blind or fibreoptic

**PLAN C**
**AWAKEN**
- re-group
- postpone surgery

- two handed BMV - Adjuncts - LMA

**PLAN D**
**CICO/CICV**
- needle or surgical airway

**Ramp - Ear to Sternum**
- Stylet ‘straight-to-cuff’ - Frova Oxygenating Bougie
- Change Blade Size
- Consider Miller or McCoy
- KingVision VL

**Use LMA - Classic or Supreme**
- Intubating LMA - FastTrach or Air Q II
- Blind intubate thro’ iLMA or fibreoptic assist if available
- Use Parker tip ETT if available

**Bag Mask Ventilate**
- Oropharyngeal &/or Nasopharyngeal Airway
- LMA (any)
- Sugammadex at 4-8mg/kg if available

**Consider USS to locate & mark cricothyroid membrane**
- 14 G jelco and O2 connection with 3-way tap
- high pressure O2 device
- Size 22 scalpel - Bougie - size 6.0 ETT
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**Oxygen supply**
- Check:
  - Pressure gauges
  - Flow meters
  - FiO2
  - Vaporizer housing

**Anaesthetic machine**
- Check Ventilator:
  - VT
  - Rate
  - Airway Pressures
  - Mode

**Anaesthetic circuit**
- Check Circuit:
  - connections
  - one-way valves
  - filter
  - soda lime

**Patient Airway**
- Check Airway:
  - Exclude obstruction
  - in native airway
  - in filter
  - in airway devices
  - Exclude secretions/plugging - pass suction catheter beyond end of ETT

**Ventilation of patient**
- Ensure adequate ventilation:
  - exclude bronchial intubation
  - look/listen for bilateral AE
  - assess adequacy of MV
  - exclude bronchospasm
  - recheck airway pressures
  - exclude pneumothorax

**Patient Lungs**
- Consider Gas Exchange:
  - aspiration
  - pulmonary oedema
  - consolidation
  - atelectasis
- Consider Embolism
  - of thrombus, air or fat

**Patient Circulation**
- Circulation
  - low cardiac output
- Anaemia
  - reduced O2 carriage
  - high O2 extraction
  - decreased mixed venous PO2

**Patient Tissues**
- Tissue Uptake of O2
  - Increased metabolism
  - fever
  - thyroid crisis
  - etc

**UNEXPLAINED HYPOXIA - SpO2 < 90% or decrease > 5% during anaesthesia**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

ELEVATED ETCO2

**Inhaled / Exogeneous CO2**
- Check capnograph for return to baseline?
- Laparoscopic CO2 insufflation?
- NaHCO3 administration?
- Inspired CO2 (soda lime exhausted)?
- Incompetent valves or Patient Re-breathing?

**Hypoventilation**
- Respiratory depression?
- Increased mechanical load on lungs?
  (decreased compliance, increased resistance in system)
- Inadequate IPPV - check TV/RR/PEEP?
- Increased dead space - anatomical/physiological?

**Increased Production of CO2**
- Fever?
- Parenteral nutrition?
- Malignant hyperthermia?

**DECREASED or ABSENT ETCO2**

**Airway**
- Exclude inadvertent oesophageal intubation?

**Circuit**
- Air entrainment (leak)?
- Dilution of gas (sampling problem)?
- Sampling line connected to circuit & monitor?

**Ventilator**
- Check settings, exclude raised RR?

**Gas Exchange Problem**
- Profound Hypotension?
- Pulmonary Embolism?
- Cardiac Arrest?

**Decreased Production**
- Hypothermia
- Decreased metabolism

**NB : Apnoea causes rise of PaCo2 8-15mmHg first min, then 3mmHg/min**
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

**Gas supply**
- Check Gas Supply:
  - check O2 bypass
  - ensure O2 flush not jammed
  - eliminate other high pressure source

**Anaesthetic circuit**
- Check Circuit:
  - bag / ventilator switch?
  - obstruction to expiration in circuit/ventilator/scavenger system?
  - PEEP valve & settings?
  - exclude circuit & machine by ventilating with bag

**Patient airway**
- Exclude Obstruction:
  - filter
  - airway
  - ETT
  - secretions / foreign body

**Patient lungs**
- Bilateral chest expansion?
- Endobronchial intubation, PTX
- Breath sounds?
  - Bronchospasm, atelectasis, aspiration, pulmonary oedema, endobronchial intubation

**Patient pleural space**
- Consider and exclude:
  - pneumothorax
  - haemothorax
  - 14G needle (2nd iCS MCL)
  - Finger or tube thoracostomy (ant axillary line 5th ICS)

**Patient chest wall**
- Exclude inadequate chest wall relaxation
  - inadequate muscle relaxation
  - opioid-induced rigidity
  - malignant hyperthermia
  - obesity

**Surgical procedure**
- Raised intrathoracic pressure
  - surgical intervention
  - insufflation
  - patient position
  - assistant leaning on chest!

**HIGH AIRWAY PRESSURES**
- Difficulty ventilating patient decreased compliance in bag poor chest expansion reduced tidal volume high airway pressure alarm
  - Hypoxia (due to hypoventilation)
  - Circulatory collapse (high intrathoracic pressure)
  - Tachycardia
Adult bradycardia algorithm

- Assess using the ABCDE approach
- Give oxygen if appropriate and obtain IV access
- Monitor ECG, BP, SpO₂, record 12-lead ECG
- Identify and treat reversible causes (e.g., electrolyte abnormalities)

Adverse features?
- Shock
- Syncope
- Myocardial ischaemia
- Heart failure

Atropine 500 mcg IV

Satisfactory response?

YES

Interim measures:
- Atropine 500 mcg IV repeat to maximum of 3 mg
- Isoprenaline 5 mcg min⁻¹ IV
- Adrenaline 2-10 mcg min⁻¹ IV
- Alternative drugs *
  OR
  - Transcutaneous pacing

Risk of asystole?
- Recent asystole
- Mobitz II AV block
- Complete heart block with broad QRS
- Ventricular pause > 3 s

YES

NO

Seek expert help
Arrange transvenous pacing

*Alternatives include:
- Aminophylline
- Dopamine
- Glucagon (if beta-blocker or calcium channel blocker overdose)
- Glycopyrrolate can be used instead of atropine

NO

Observe
TACHYCARDIA

Adult tachycardia (with pulse) algorithm

Synchronised DC Shock
Up to 3 attempts

- Amiodarone 300 mg IV over 10-20 min and repeat shock, followed by.
- Amiodarone 900 mg over 24 h

Yes/Unstable

Adverse features?
- Shock
- Syncope
- Myocardial ischaemia
- Heart failure

No/Stable

Is QRS narrow (< 0.12 s)?

Broad
- Broad QRS
  - Is rhythm regular?
    - Seek expert help
      - Possibilities include:
        - AF with bundle branch block (treat as for narrow complex)
        - Pre-excited AF (consider amiodarone)
        - Polymorphic VT (e.g. torsade de pointes - give magnesium 2 g over 10 min)

Regular
- If ventricular tachycardia (or uncertain rhythm):
  - Amiodarone 300 mg IV over 20-60 min; then 900 mg over 24 h
  - If previously confirmed SVT with bundle branch block:
    - Give adenosine as for regular narrow complex tachycardia

Irregular
- If ventricular fibrillation (VF):
  - Use vagal manoeuvres
  - Adenosine 6 mg rapid IV bolus; if unsuccessful give 12 mg; if unsuccessful give further 12 mg.
  - Monitor ECG continuously

Narrow
- Narrow QRS
  - Is rhythm regular?
    - Irregular Narrow Complex Tachycardia
      - Probable atrial fibrillation
      - Control rate with:
        - β-Blocker or diltiazem
      - Consider digoxin or amiodarone if evidence of heart failure
    - Sinus rhythm restored?
      - Yes
        - Probable re-entry paroxysmal SVT:
          - Record 12-lead ECG in sinus rhythm
          - If recurs, give adenosine again & consider choice of anti-arrhythmic prophylaxis
      - No
        - Seek expert help
          - Possible atrial flutter
            - Control rate (e.g. β-Blocker)
Advanced Life Support for Adults

Start CPR
30 compressions : 2 breaths
Minimise Interruptions

Attach
Defibrillator / Monitor

Assess Rhythm

Shockable

Shock

CPR for 2 minutes

Non Shockable

CPR for 2 minutes

Return of Spontaneous Circulation ?

Post Resuscitation Care

During CPR
Airway adjuncts (LMA / ETT)
Oxygen
Waveform capnography
IV / IO access
Plan actions before interrupting compressions
(e.g. charge manual defibrillator)
Drugs
  Shockable
    * Adrenaline 1 mg after 2nd shock
      (then every 2nd loop)
    * Amiodarone 300 mg after 3rd shock
  Non Shockable
    * Adrenaline 1 mg immediately
      (then every 2nd loop)

Consider and Correct
Hypoxia
Hypovolaemia
Hyper / hypokalaemia / metabolic disorders
Hypothermia / hyperthermia
Tension pneumothorax
Tamponade
Toxins
Thrombosis (pulmonary / coronary)

Post Resuscitation Care
Re-evaluate ABCDE
12 lead ECG
Treat precipitating causes
Re-evaluate oxygenation and ventilation
Temperature control (cool)

December 2010
Ask `who will be team leader` & then perform a systematic check of each of following

### AT RISK
- Ischaemic heart disease
- Hypertension
- Fluid losses
- Diabetes
- Smoker, Lipids, FHx etc.

### OH CRAP !
- Oxygen, Haemoglobin
- Contractility, Rate, Afterload, Preload

### MANAGEMENT
- Are SpO2, BP, HR, Hb, PEEP optimised?  
- ECG changes verified with ECG?  
- Surgeon aware of problem?  
- Defibrillator & Pacing available?  
- RATE CONTROL (box) addressed?  
- BLOOD PRESSURE (box) addressed?  
- CARDIOLOGIST CONSULTED?  
- Specific therapy agreed  
  - ASPIRIN, HEPARIN, NITRATES etc  
- Plan for Extubation & Recovery?  

**Rate Control**
- **EXCLUDE** hypovolaemia, awareness, or raised CO2 as cause of tachycardia  
- **NEXT**
  - **BETA-BLOCKADE** (aim for HR < 60)  
  - Esmolol - 0.25-0.5 mg.kg bolus  
  - 25-300 mg/kg/min infusion  
  - Metoprolol - 1-15 mg titrated over 15 mins  
  - If beta-blockade contra-indicated use verapamil  
  - 2.5 mg - repeat if needed  

**FILLING**
- Optimise filling, consider need for PEEP  
- **CAUTION USE OF VASOPRESSORS**  
- For hypertension, consider  
  - GTN - sublingual (0.3-0.9 mg)  
  - IVI(0.25 - 4 mg/kg/min - titrate to effect)  
  - Clonidine (30 mg every 5 minutes up to 300 mg)

**CAUTION USE OF VASOPRESSORS**

**CARDIOLOGY ADVICE 13STAR**

---

**MYOCARDIAL ISCHAEMIA**

- Lead II is best for detecting arrhythmias.  
- CM5 detects 89% of ST-segment ischaemic changes  
  - (right arm electrode on manubrium, left arm electrode on V5 and indifferent lead on left shoulder).
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**HYPERTENSION**

<table>
<thead>
<tr>
<th>Pre-existing hypertension</th>
<th>Hypovolaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>treated or untreated ? Check □</td>
<td>blood loss ? Check □</td>
</tr>
<tr>
<td>medication taken ? Check □</td>
<td>fluid deficit ? Check □</td>
</tr>
</tbody>
</table>

**Sympathetic reflex response**

| light anaesthesia? Exclude vaporizer leak, IV disconnect Check □ | contractility, rate, dysthymia ? Check □ |
| Hypoxia or hypercarbia ? Check SpO2, ETCO2 Check □             | anaesthetic agent ? Check □ |
| cerebral event? Check □                                        | vasodilators? Check □ |
| raised ICP ? Check □                                            | |
| ischaemia ? Check □                                            | |
| vasospasm ? Check □                                            | |

**Sympathomimetic effect?**

<table>
<thead>
<tr>
<th>Exogeneous ie : administration of vasopressor Check □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endogeneous eg: phaeochromocytoma Check □</td>
</tr>
</tbody>
</table>

**Surgical**

<table>
<thead>
<tr>
<th>stimulus Check □</th>
</tr>
</thead>
<tbody>
<tr>
<td>tourniquet Check □</td>
</tr>
<tr>
<td>position eg: Trendelenburg Check □</td>
</tr>
</tbody>
</table>

Whilst vasopressors elevate BP, treatment should be directed to cause

**BLOOD PRESSURE**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

ACCESS TO THE CIRCULATION

- Two wide bore IVs
- Consider intraosseous with Bone Injection Gun
- Consider venous cutdown
- Consider Rapid Infuser Catheter

PARAMETERS

- Permissive hypotension MAP 65-70 mmHg may be acceptable (unless TBI/spinal injury/exsanguination)
- t > 35, pH > 7.2, Lactate < 4, BE < -6
- Ca > 1.1, Plt > 50, INR < 1.5 Fibrinogen > 1

FIND THE BLEEDING, STOP THE BLEEDING

- Minimise time to Surgery
- Use tourniquets/direct pressure to control peripheral bleeding
- Tamponade bleeding eg: pelvic binder, direct pressure, sutures
- Tranexamic acid 1g load in first 4 hrs
- If PPH - Uterine massage, oxytocin infusion, ergometrine, misoprostol, TXA

USEFUL MEDICATIONS

- Hartmanns 250ml bolus
- Packed calls or Whole Blood
- Tranexamic acid 1g load

PPH

- Oxytocin 5 U IV or 10 U IM
- Oxytocin Infusion 40 U / litre @ 250 ml/hr
- Ergometrine 250 mcg IV or 500 mcg IM
- Misoprostol 200 mcg x 5 PR (1mg)

see also PPH checklist

WARM FLUIDS / WARM THE ROOM / CATHETERISE THE BLADDER
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**EXCLUSIONS**

Anaesthetic circuit obstruction
- filter
- kinked ETT
- cuff herniation
- tube migration

Disconnect circuit and ventilate directly with self-inflating bag
Check ☑

if pressure still high, problem is in airway or ETT

**PRESENTATION**

Wide range of possible presentations
Most common include:
- cardiovascular collapse or hypotension (88%)
- erythema (48%)
- bronchospasm (40%)
- angioedema (24%)
- cutaneous rash (13%)
- urticaria (8%)

**IMMEDIATE MANAGEMENT CHECKLIST**

**STOP TRIGGERS**
colloids/latex/antibiotic/blood/NMB
Check ☑

**MAINTAIN ANAESTHESIA** with INHALATIONAL AGENT if possible
Check ☑

Call for HELP, note TIME
Check ☑

Give 100% OXYGEN, give FLUIDS
Check ☑ Check ☑

ADRENALINE 50-100mcg IV (0.5ml-1ml of 1/10,000)
titrate to response or
0.5mg IM (thigh) if no IV access
Check ☑

ANTIHISTAMINE, HYDROCORTISONE 200mg 6/24
Check ☑

SALBUTAMOL 250 mcg IV or 2.5-5mg nebuliser into circuit
Check ☑

**ADRENALINE INFUSION**

1:1000 ADRENALINE
vial (1 mg / ml)

Add 3 mg (3 vials 1:1000)
to total 50 mls N Saline (60 mcg/ml)

Run at 2 - 20 ml / hr aim MAP > 70

**ADRENALINE CONCENTRATIONS**

1ml of 1/1000 = 1mg
10ml of 1/10,000 = 1mg

**IV BOLUS DOSE**
50 - 100 mcg

**IM DOSE**
0.5mg IM
START HERE

Ask ‘who will be team leader’ & then perform a systematic check of each of following

---

**PRESENTATION**

- Masseter spasm
- Tachypnoea in spontaneous breathing patient
- Rise in ETCO2 in ventilated patient
- Unexplained tachycardia, progressing to hypoxaemia
- Raised temperature
- Arrhythmias

---

**EXCLUSIONS**

- Inadequate anaesthesia / analgesia
- Infection / Sepsis
- Tourniquet Ischaemia
- Anaphylaxis (exclude hypotension)
- Phaeochromocytoma or Thyroid Storm

---

**RISK FACTORS**

- Family history
- Death under anaesthesia in family
- Volatiles and Suxamethonium

---

**INVESTIGATIONS**

- ABG, U&Es, CK, FBC, Clotting
- Muscle biopsy

---

**IMMEDIATE MANAGEMENT**

- **DISCONTINUE VOLATILES**
  - Check
  - and give
- **100% OXYGEN VIA HIGH FLOW**
  - Check
- **CALL FOR HELP - MH BOX**
  - Check
- **ALLOCATE TASK CARDS**
  - Check
- **MAINTAIN ANAESTHESIA with PROPOFOL and OPIOID**
  - Check
- **EXPEDITE SURGERY**
  - Check
- **DANTROLENE 2.5mg/kg IV until hypermetabolism resolved**
  - Check
- **COOLING - AXILLA / GROIN / NECK**
  - Check
- **COLD FLUSH NGT and IDC**
  - Check

---

**MOBILISE ALL AVAILABLE STAFF**

**NOTIFY medSTAR 13STAR**

**MH EMERGENCY KIT & TASK CARDS**

---

**MALIGNANT HYPERTHERMIA**
TURP SYNDROME

PRESENTATION
Excess absorption of fluid during TURP

EARLY MANIFESTATIONS
CVS
bradycardia, hypertension

GI
nausea & vomiting, abdominal distension

CNS
anxiety/confusion, headache, dizziness, slow waking GA

LATE MANIFESTATIONS
CVS
hypotension, angina, cardiac failure

RESP
dyspnoea, tachypnoea, cyanosis

CNS
twitching, visual changes, seizures, coma

GU
renal tubular acidosis, reduced urine output

EXCLUSIONS
Congestive cardiac failure
All other causes of confusion

RISK FACTORS
Absorption 1-2 litres fluid per 40 mins operating
Large prostate
Prolonged operation > 60 mins
Hypotonic fluids given IV
Volume of irrigation > 30 litres
Inexperienced surgeon
Height of irrigation > 60cm above patient
Comorbidities - liver disease, renal stones, UTI

Immediate Management
High index of suspicion
ABC - 100% Oxygen
Stop irrigation fluid infusion, catheterise
Check Na and Hb regularly & correct them
Frusemide 40mg IV
### Emergency GA LSCS CHECKLIST

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITRATE GIVEN?</td>
<td>☐</td>
</tr>
<tr>
<td>LARGE BORE IV ACCESS AND SECURED?</td>
<td>☐</td>
</tr>
<tr>
<td>FLUIDS PRELOADED?</td>
<td>☐</td>
</tr>
<tr>
<td>TABLE IN LEFT LATERAL TILT?</td>
<td>☐</td>
</tr>
<tr>
<td>PREOXYGENATED 100% O2 &gt; 4 MINUTES?</td>
<td>☐</td>
</tr>
<tr>
<td>ETT - STYLET - BOUGIE - TAPE</td>
<td>☐</td>
</tr>
<tr>
<td>SUCTION - ETCO2 - MONITORING</td>
<td>☐</td>
</tr>
<tr>
<td>FAILED RSI PLAN DISCUSSED?</td>
<td>☐</td>
</tr>
<tr>
<td>RSI</td>
<td>☐</td>
</tr>
<tr>
<td>CRICOID</td>
<td>☐</td>
</tr>
<tr>
<td>PROPOFOL 2mg/kg</td>
<td>☐</td>
</tr>
<tr>
<td>SUXAMETHONIUM 1mg/kg</td>
<td>☐</td>
</tr>
<tr>
<td>ETT PLACEMENT CONFIRMED WITH ETCO2</td>
<td>☐</td>
</tr>
<tr>
<td>VOLATILE</td>
<td>☐</td>
</tr>
<tr>
<td>ONGOING NEUROMUSCULAR BLOCKADE</td>
<td>☐</td>
</tr>
<tr>
<td>OXYTOCIN available post-delivery</td>
<td>☐</td>
</tr>
<tr>
<td>40 UNITS / 1000ml @ 250ml/hr if needed</td>
<td>☐</td>
</tr>
<tr>
<td>NEONATAL RESUS ANTICIPATED?</td>
<td>☐</td>
</tr>
</tbody>
</table>

### Emergency SPINAL LSCS CHECKLIST

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<td>☐</td>
</tr>
<tr>
<td>TABLE IN LEFT LATERAL TILT?</td>
<td>☐</td>
</tr>
<tr>
<td>L4-5 INTERSPACE IDENTIFIED?</td>
<td>☐</td>
</tr>
<tr>
<td>PREP - DRAPE - GOWN - GLOVES - MASK - HAT</td>
<td>☐</td>
</tr>
<tr>
<td>ANTISEPTIC REMOVED FROM SPINAL TRAY</td>
<td>☐</td>
</tr>
<tr>
<td>LOCAL ANAESTHETIC 2% XYLOCAINE/ADRENALINE</td>
<td>☐</td>
</tr>
<tr>
<td>2.5ML BUPIVACAINE 0.5% with OPIATE</td>
<td>☐</td>
</tr>
<tr>
<td>FENTANYL 20-25 mcg or MORPHINE 125 mcg</td>
<td>☐</td>
</tr>
<tr>
<td>SKIN INFILTRATION</td>
<td>☐</td>
</tr>
<tr>
<td>INTERSPINOUS LIGAMENT IDENTIFIED</td>
<td>☐</td>
</tr>
<tr>
<td>CLEAR CSF then INJECT &amp; BARBOTAGE</td>
<td>☐</td>
</tr>
<tr>
<td>OXYTOCIN available post-delivery</td>
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<td>NEONATAL RESUS ANTICIPATED?</td>
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**CAESAREAN SECTION**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**LSCS CHECK LIST**

**NEURAXIAL SECTION**

- Spinal 2.5ml 0.5% bupivacaine + 25mcg fentanyl (or 125mcg spinal morphine)
- Top up existing epidural (T10) to T4 for LSCS supplemental nitrous if needed 50:50 N20/O2

**GA SECTION**

- Preoxygenate - 100% oxygen
- Anticipate difficult airway and rapid desaturation, Cricoid pressure
- RSI : Propofol - Suxamethonium - ET Tube
- Once sux wears off use nondepolarising NMB

**PPH**

- Consider Tone - Trauma - Tissues - Thrombin
- Oxytocin for all - 5 U IV once uterus empty
- Oxytocin infusion 40U @ 10U/hr
- Check placenta
- Fundal rub to uterus
- Ergometrine 250mcg IV or 500mcg IM
- Misoprostol 1000mcg PR
- Tranexamic acid 1g load
- Check Chem 8, INR
- CONSIDER SURGICAL OPTIONS?

**CONSIDER SURGICAL OPTIONS?**

- Pre-Eclampsia
  - 4g MgSO4 over 15 mins, then 1g/hr IVI
  - Labetalol 50mg IV
  - +/- Hydralazine 5mg IV

**NEONATAL RESUS**

- HR 60-100 assisted ventilation
- HR < 60 start CPR 3:1
- Adrenaline 10mcg/kg IV (use the 1V, not 2A)

**Prepare patient & partner**

- IV access 16G, warm IV fluids on pump set
- Sodium citrate drink
- Left lateral tilt to avoid aorto-caval hypotension

**Document**

- Consider need for extra help for neonate
- Position of placenta, Previous LSCS/scarring, Multiparous
- Gestational DM, Sepsis, Traumatic delivery, Other

**Prophylactic antibiotics 30 mins before KTS**

**Documentation**

- Time called & time arrived
- Consent to anaesthesia
- Time anaesthesia initiated
- GGMG, Prep, Drape, asepsis
- Positioning
- Time of KTS
- Time of delivery
- Time of drugs
- If conversion to GA offered, document risks, time and specify if declined

**Any complications?**

- Post-op DVT prophylaxis and analgesia charted
- SC heparin withheld for 24 hrs after spinal
- Epidural catheter tip sighted & intact
**EPIDURAL CHECKLIST**

- IV ACCESS, SECURED & FLUIDS PRELOADED?
- VALID INDICATION, RECENT VE & CONSENT?
- APPROPRIATE POSITION?
- L4-5 INTERSPACE IDENTIFIED?
- PREP - DRAPE - GOWN - GLOVES (8) - MASK - HAT
- ANTISEPTIC REMOVED FROM EPIDURAL TRAY
- SALINE AVAILABLE if LORTS APPROACH
- EPIDURAL CATHETER PRIMED with LA
- SKIN LA 2% XYLOCAINE with 1/200,000 ADRENALINE
- INTERSPINOUS LIGAMENT IDENTIFIED
- SLOW ADVANCE WITH TUOHY NEEDLE
  8cm, 16G/18G slow advance to LORTS(A) in epidural space

  Note: CATHETER DEPTH advance CATHETER +5cm

- SECURE, TEST DOSE 3ml LA 2% Xylo 1/200,000 Adr
- BUPIVACAINE 0.125%/100mcg fentanyl (20ml premix)
- TEST ADEQUACY OF BLOCK : LT > COLD, IDC
- TOP UP for LSCS - 2% xylo with 1/200,000 10-20ml

**EMERGENCY SPINAL LSCS CHECKLIST**

- ANTIBIOTICS & CITRATE GIVEN?
- IV ACCESS, SECURED & FLUIDS PRELOADED?
- CONSIDER EPHEDRINE or PHENYLEPHRINE
- TABLE POSITION, may need L lateral to open interspace
- L4-5 INTERSPACE IDENTIFIED?
- PREP - DRAPE - GOWN - GLOVES - MASK - HAT
- ANTISEPTIC REMOVED FROM SPINAL TRAY
- LOCAL ANAESTHETIC 2% XYLOCAINE/ADRENALINE
- INTERSPINOUS LIGAMENT IDENTIFIED
- CLEAR CSF, SWIFT INJECTION with BARBOTAGE
- 2.5ML BUPIVACAINE 0.5% with FENTANYL 20-25MCG
  (or spinal morphine 125mcg)
- TEST ADEQUACY OF BLOCK : LT > COLD
- CALF COMPRESSORS and INDWELLING CATHETER
- OXYTOCIN 3-5 U post-delivery (+/-40U/L @ 250ml/hr)
- POST-OP MULTIMODAL ANALGESIA
- CLEXANE 40mg sc OD > 4 hrs post spinal or catheter out

---

**NEURAXIAL BLOCKADE - Labour EPIDURAL & SPINAL for LSCS**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

<table>
<thead>
<tr>
<th>CONSIDER POTENTIAL CAUSES &amp; SUGGEST TO MIDWIFE &amp; OBSTETRICIAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormalities of uterine contraction</td>
</tr>
<tr>
<td>Retained products of conception or invasive placenta</td>
</tr>
<tr>
<td>Genital tract trauma</td>
</tr>
<tr>
<td>Abnormalities of coagulation</td>
</tr>
</tbody>
</table>

Resuscitate A - B - C
Oxygen 15 l/min NRBM and IV Access 16G x 2
5 minutely Obs HR/BP/RR/SpO2
Mobilise OBS Dr - ANAES Dr - MW - RN - EN - Consider need for THEATRE TEAM, BLOOD, WARMED FLUIDS, INFUSION PUMPS x 2

<table>
<thead>
<tr>
<th>INITIAL MEASURES</th>
<th>BLEEDING despite CONTRACTED UTERUS?</th>
<th>STILL BLEEDING?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic resus as above, also ensure:</td>
<td>Look for other causes:</td>
<td>Consider operation &amp; Retrieval</td>
</tr>
<tr>
<td>Fundal pressure / rub up contraction</td>
<td>Move to theatre</td>
<td>Bimanual compression</td>
</tr>
<tr>
<td>Check uterus not inverted</td>
<td>Ensure adequate anaesthesia</td>
<td>Expert advice 13STAR</td>
</tr>
<tr>
<td>Check placenta is intact</td>
<td>Lithotomy position, IDC</td>
<td>RSI GA</td>
</tr>
<tr>
<td>Lay flat, reverse Trendelenburg</td>
<td>Adequate light, equipment</td>
<td>Anticipate difficult airway - get DAE kit</td>
</tr>
<tr>
<td>Set up EnFlow fluid warmer</td>
<td>Inspect looking for genital tract trauma</td>
<td>Pass a NGT</td>
</tr>
<tr>
<td>Infuse Hartmann’s</td>
<td>Exclude uterine rupture</td>
<td>Intramyometrial prostaglandin-F2a</td>
</tr>
<tr>
<td>Consider need for BLOOD</td>
<td>Suture &amp; repair as necessary</td>
<td>5mg dilute up to 10ml</td>
</tr>
<tr>
<td>Syntocinon 5U IV / 10U IM</td>
<td>Consider need for BLOOD</td>
<td>6ml in fundus</td>
</tr>
<tr>
<td>Ergometrine 250mcg IV / 500mcg IM</td>
<td>Consider coagulopathy &amp; sepsis (GBS)</td>
<td>Consider need for BLOOD</td>
</tr>
<tr>
<td>Oxytocin IVI 40u/L @ 250ml/h</td>
<td>Check Chem 8, INR, Hb, Lactate</td>
<td>- Bakri balloon tamponade</td>
</tr>
<tr>
<td>Misoprostol 5 x 200mcg PR</td>
<td>Warm OT, Bair Hugger, EnFlow warmer</td>
<td>- Explore uterine cavity</td>
</tr>
<tr>
<td></td>
<td>TRANEXAMIC ACID 1g load over 10’</td>
<td>- B-lynch suture</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Hysterectomy / ligate int iliacs</td>
</tr>
</tbody>
</table>

POST PARTUM HAEMORRHAGE
Newborn Life Support

1. Term gestation? Breathing or crying? Good tone?
   - Yes: Routine care: Prevent heat loss Ongoing evaluation
     - No: Stay with mother
2. Prevent heat loss
   - No: Ensure open airway
3. HR below 100? Gasping or apnoea?
   - Yes: Positive pressure ventilation
     - No: Laboured breathing or persistent cyanosis?
       - Yes: Ensure open airway
         - No: Post-resuscitation care
4. HR below 100?
   - Yes: Ensure open airway
     - No: Targeted pre-ductal SpO₂ after birth
       - 1 min: 60-70%
       - 2 min: 65-85%
       - 3 min: 70-90%
       - 4 min: 75-90%
       - 5 min: 80-90%
       - 10 min: 85-90%
5. HR below 60?
   - Yes: Add chest compressions
     - Yes: Venous access, adrenaline
       - No: Consider volume expansion
     - No: Consider increasing pressure & oxygen
Ask ‘who will be team leader’ & then perform a systematic check of each of the following:

### Adrenaline

**Preparation**

1:10,000 = 100 mcg/ml

**IV Dose**

10 - 30 mcg/kg = 0.1 - 0.3 ml/kg

**Via ETT**

50 - 100 mcg/kg = 0.5 - 1.0 ml/kg

### Fluids

*Saline or blood,* depending on circumstances

10 - 20 ml/kg via IV or Umbilical Vein Catheter

### Intravenous Catheters

**Intraosseous**

(Quicker than UVC)

**Syringe & 3-Way**

(to administer fluid bolus / drugs)

**Umbilical Vein Catheter**

(2 arteries, 1 vein!)

---

**Neonatal Resus - Drugs**
**ADENOSINE**
- First dose: 0.05 mg/kg
- Second dose: 0.10 mg/kg
- Then: 0.20 mg/kg
- Give via fast flush

**ADRENALINE**
- IM: 
  - < 6 yr: 150 mcg (0.15 ml)
  - 6-12 yr: 300 mcg (0.3 ml)
  - > 12 yr: 500 mcg (0.5 ml)
- IV: caution with dose
  - 0.01 mg/kg (10 mcg/kg)
  - 1/10,000 - 0.1 ml/kg IV
- ETT: 1/1000 - 0.1 ml/kg

**ADRENALINE INFUSION**
- 0.3 mg/kg in 100 ml N-saline
  - 1 ml/hr = 0.05 mcg/kg/min
  - Range: 1-20 ml/hr

**AMIODARONE**
- 5 mg/kg load
  - Infuse 0.5 mg/kg/hr

**ATRACURIUM**
- 0.5 mg/kg

**ATROPINE**
- 20 mcg/kg IV (max 600 mcg)
  - Dilute 0.6 mg to 6 ml
  - = 100 mcg/5 ml
  - So give 1 ml per 5 kg IV

**CODEINE**
- 1 mg/kg

**DEFIBRILLATION**
- 2-4 J/kg – Biphasic

**DEXTROSE**
- 0.5 gm/kg
  - 10% - 5 ml/kg IV
  - 50% - 1 ml/kg IV

**ETT**
- Length: Age/2 + 12 cm teeth
  - Diameter: > 1 yr - Age/4 + 4 mm

**FENTANYL**
- 1 mcg/kg IV (0.5 mcg/kg IN)

**FENTANYL SEDATION**
- 2-4 mg/kg IM
  - 0.25 - 0.5 mg/kg IV
  - Repeat as needed

**FENOTHOLALIN**
- 1 mg/20 ml = 50 mcg per ml
  - Run at 10 mcg/kg/min

**FENOTHOLALIN SEDATION**
- 0.6-1.2 mg/kg IV STAT
  - 0.1 mg/kg boluses

**KETAMINE SEDATION**
- 2-4 mg/kg IM
  - 0.25 - 0.5 mg/kg IV
  - Repeat as needed

**KETAMINE - ANAESTHETIC**
- 5-10 mg/kg IM
  - 1-2 mg/kg IV
  - Repeat as needed

**METARAMINOL**
- 0.01 mg/kg IV
  - 10 mg in 20 ml = 0.5 mg/ml

**MIDAZOLAM**
- 0.1 - 0.2 mg/kg IV

**MORPHINE**
- 0.1 mg/kg IV

**NEOSTIGMINE**
- 0.05 mg/kg IV

**PARACETAMOL**
- Load 20 mcg/kg first dose
  - Then 15 mg/kg 6 hrly

**PROPANOL**
- 1-3.5 mg/kg IV

**REMIFENTANIL**
- 1 mcg/20 ml = 50 mcg per ml
  - Run at 10 mcg/kg/min

**ROCURONIUM**
- 2-4 mg/kg IV
  - 3 mg/kg neonate
  - 4 mg/kg IM

**THIOPENTONE**
- 4 mg/kg IV

**VECURONIUM**
- 0.1 mg/kg IV

**VOLUME EXPANSION**
- 20 ml/kg N-saline

**WEIGHT (kg)**
- Infants < 12 months
  - (age in months + 9) / 2
- Children 1-5 years
  - 2 x (age in years + 5)
- Children 5-12 years
  - 4 x age in years

---

**EMERGENCY ADRENALINE**
- Adrenaline 10 mcg/kg IV
  - IM preferred in anaphylaxis

**EMERGENCY ATROPINE**
- 20 mcg/kg

**EMERGENCY METARAMINOL**
- 10 mcg/kg

**EMERGENCY PROPOFOL**
- 2 mg/kg

**EMERGENCY SUXAMETHONIUM**
- 2 mg/kg
  - 3 mg/kg neonate
  - 4 mg/kg IM

**EMERGENCY THIOPEPTONE**
- 4 mg/kg IV

**EMERGENCY VECCURONIUM**
- 0.1 mg/kg IV

**EMERGENCY FENTHYMBUTONE**
- 2-4 J/kg Biphasic

---

**PAEDIATRIC EMERGENCY FORMULARY**
**Adrenaline IM 1/1000**
0.01ml/kg to max 0.5ml
IM lateral thigh, repeat 5 minutely

**Adrenaline IV 1,10,000**
1mg/10ml 1/10,000 IV
10mcg (0.1ml) per kg of 1/10,000

**Adrenaline Infusion**
1/1,000 = 1mg/ml
3mg in 50ml N saline
0.3mg/kg - 60mcg/ml
2mcg/min = 2ml/hr to
20mcg/min = 20ml/hr

**Amiodarone**
5mg/kg over 20 min
can push over 2 mins
central access IV

**Amiodarone Infusion**
600mg in 50mls 5% dextrose
0.5mg/kg/hr central access

**Atracurium**
0.5 mg/kg (0.3-0.6mg/kg) IV induce,
then 1/3rd dose subsequently

**Atropine**
600mcg in 6ml NS
10-20mcg/kg kids
300-600mcg adults

**Cis-atracurium**
0.15mg/kg IV

**Dextrose**
0.5 gm/kg
10% - 5 ml/kg IV
50% - 1 ml/kg IV

**Ephedrine**
3-6mg bolus IV

**Esmolol**
0.5mg/kg
100mg/ml dilute in 10ml = 10mg/ml
100kg=50mcg=5ml

**ETT Length**
Age/2 + 12cm to teeth

**ETT Diameter**
>1yr - Age/4 + 4

**Fentanyl**
100mcg/2ml
2-3 mcg/kg IV
0.5-1 mcg/kg intranasal

**Fenogon Infusion**
50mg in 50ml 5% dextrose
1mg/ml at 3-12ml/hr

**Heparin Infusion**
25,000 units in 500ml (50U/ml)
1000U/hr = 20ml/hr

**Insulin IV**
50 units in 50ml
5-10 U/hr = 5-10ml/hr

**Isoprenaline**
1mg in 50ml 5% dextrose
Give 20mcg (1ml)
then infuse at 1-4mcg/min
(3-12 ml/hr)

**Ketamine Induction**
1-2 mg/kg IV
5-10mg/kg IM

**Ketamine Sedation**
0.2-0.5 mg/kg IV sedation
2-4mg/kg IM sedation

**Ketamine Infusion**
0.25mg/kg/hour

**Ketamine/Midazolam Infusion**
50mg each in 50ml NS
1mg/ml (1mg/10ml)
at 10mcg/kg/hr
= 2.5 - 15ml/hr

**Ketamine/Midazolam Infusion**
0.1mg/ml (1mg/10ml)
at 10mcg/kg/hr
= 2.5 - 15ml/hr

**Metaraminol**
0.5mg bolus

**Midazolam**
0.1 mg/kg IV

**Morphine**
0.1 mg/kg IV

**Morphine/Midazolam Infusion**
50mg each in 50ml NS
1mg/ml (1mg/10ml)
at 10mcg/kg/hr
= 2.5 - 15ml/hr

**Naloxone**
0.1 to 0.2 mg IV 2-3 minute to
desired degree of reversal

**Neostigmine**
005mg/kg IV

**Paracetamol**
20mg/kg first dose
then
15mg/kg PO

**Propofol**
2mg/kg titrate

**Remifentanil**
1mg/20ml = 50 mcg per ml
Run at 0.1mcg/kg/min

**Rocuronium**
0.6-1.2 mg/kg IV STAT
(get same intubating conditions as
sux if use roc 1.2mg/kg)
0.1 mg/kg boluses thereafter

**Salbutamol IV**
10mcg/kg IV bolus over 10 mins

**Sodium Bicarbonate 8.4%**
1-2 ml/kg

**Suxamethonium**
1 mg/kg adult
2 mg/kg paed

**Thiopentone**
3-5 mg/kg

**Vecuronium**
0.1 mg/kg load
bolus every 30m with 5-10mg vec

**Vecuronium Infusion**
0.1 mg/kg/hr

**Volume Expansion**
20mls/kg N/saline
<table>
<thead>
<tr>
<th>Medication</th>
<th>Description</th>
<th>Dose/Volume</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADRENALINE</strong></td>
<td>3mg in 50ml N/saline = 60mcg/ml</td>
<td>run at 2 - 20 ml/hr</td>
<td>incr. to keep MAP &gt; 70</td>
</tr>
<tr>
<td>1mg/1ml amp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AMIODARONE</strong></td>
<td>dilute 600mg (12ml) up to 50ml 5% DEX</td>
<td>run at 0.5mg/kg/hr</td>
<td>central access</td>
</tr>
<tr>
<td>150mg/3ml amp</td>
<td>12mg/ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ESMOLOL</strong></td>
<td>load 500 mcg/kg over 60secs</td>
<td>100kg = 5ml (100mg/10ml)</td>
<td>100kg = 30ml/hr</td>
</tr>
<tr>
<td>100mg/10ml</td>
<td>maintain 50mcg/kg/min</td>
<td>run at 0 - 100 mcg/hr</td>
<td></td>
</tr>
<tr>
<td><strong>FENTANYL</strong></td>
<td>100 mcg/2ml or 500 mcg/50ml premix</td>
<td>run at 3 - 12 ml/hr</td>
<td>titrate to BP/pain</td>
</tr>
<tr>
<td><strong>GTN</strong></td>
<td>dilute 50mg up to 50ml 5% DEX</td>
<td>run at 3 - 12 ml/hr</td>
<td></td>
</tr>
<tr>
<td>50mg/10ml amp</td>
<td>1mg/ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HEPARIN</strong></td>
<td>25,000 U in 50ml</td>
<td>load 5000 U IV</td>
<td>then 2ml/hr, titrate APTT</td>
</tr>
<tr>
<td></td>
<td>500 U/ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INSULIN IVI</strong></td>
<td>50U in 50ml = 1 U/ml</td>
<td>load 10U IV (not kids)</td>
<td>then run @ 5-10 ml/hr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(see Sliding Scale above)</td>
</tr>
<tr>
<td><strong>ISOPRENALINE</strong></td>
<td>1mg in 50ml 5% DEX = 20mcg/ml</td>
<td>1 ml bolus to response</td>
<td>then 3-12 ml/hr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KET/MIDAZ</strong></td>
<td>200mg ketamine /50 mcg fent in 50ml</td>
<td>run at 2-5 ml / hr</td>
<td></td>
</tr>
<tr>
<td><strong>MgSO4 (eclampsia)</strong></td>
<td>Add 4 amps (2.47g) to 100ml N/saline = 120 ml total volume (1g/12ml)</td>
<td>bolus 50ml (4g) over 20mins ie : 150ml/hr for 20 mins</td>
<td>then 1g/hr (12 ml/hr)</td>
</tr>
<tr>
<td><strong>MORPH/MIDAZ</strong></td>
<td>50mg each to 50ml with N/saline (1mg/ml)</td>
<td>run 100 mcg/kg/hr (2.5-15 ml/hr)</td>
<td></td>
</tr>
<tr>
<td><strong>PROPOFOL</strong></td>
<td>1-4 mg/kg 500mg/50ml (10mg/ml)</td>
<td>dose range 0.5 mg/kg/hr (use body wt = ml/hr eg 70kg = 70ml/hr)</td>
<td></td>
</tr>
<tr>
<td><strong>REMIFENTANIL</strong></td>
<td>1mg in 20ml = 50mcg/ml</td>
<td>run at 0.1 mcg/kg/min (100kg = 12ml/hr)</td>
<td></td>
</tr>
<tr>
<td><strong>VECURONIUM</strong></td>
<td>1mg/ml reconstitute in water for injection</td>
<td>0.1 mg/kg/hr eg: 8mg/hr in 80kg patient</td>
<td></td>
</tr>
</tbody>
</table>

**INSULIN SLIDING SCALE**

50U/50ml = 1U/ml

<table>
<thead>
<tr>
<th>BGL</th>
<th>RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>mmol</td>
<td>U/hr = ml/hr</td>
</tr>
<tr>
<td>&lt; 4</td>
<td>0 - STOP IV</td>
</tr>
<tr>
<td>4.1 - 9</td>
<td>2</td>
</tr>
<tr>
<td>9.1 - 13</td>
<td>3</td>
</tr>
<tr>
<td>13.1 - 17</td>
<td>4</td>
</tr>
<tr>
<td>17.1 - 28</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 28</td>
<td>8</td>
</tr>
</tbody>
</table>

**INFUSIONS**

Ideally use dedicated syringe driver (10 - 50ml capacity) eg Niki T34L
**SAFE PSYCH SEDATION MATRIX**

**LIAISE WITH RETRIEVAL TEAM**

**RAPID ASSESSMENT ACUTE AGITATION**

**AIRWAY?**

**BREATHING?**

**CIRCULATION**

**DISABILITY, DRUGS?**

**ENVIRONMENT, ECG**

**FULL BLADDER?**

**GLUCOSE?**

**HEAD INJURY?**

**SUGGESTED ALGORITHM**

**NO IV ACCESS**

oral olanzapine 10-20mg stat and/or
IMI midazolam 5-10mg and/or
IMI ketamine 4mg/kg

**IV ACCESS OBTAINED**

IV midazolam 2-5mg and/or
IV haloperidol 5-10mg and/or
IV ketamine 1-1.5mg/kg

repeat every 5-10 mins, target RASS 0 to -3

---

**CONSIDER**

<table>
<thead>
<tr>
<th>MENTAL HEALTH SAFETY/RISK</th>
<th>ANAESTHETIC RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOW</strong></td>
<td><strong>LOW</strong></td>
</tr>
<tr>
<td>thin, fit, fasted</td>
<td>low risk</td>
</tr>
<tr>
<td></td>
<td>restraint</td>
</tr>
<tr>
<td></td>
<td>mild anxious</td>
</tr>
<tr>
<td></td>
<td>as above</td>
</tr>
<tr>
<td></td>
<td>single agent</td>
</tr>
<tr>
<td></td>
<td>antipsychotic (+/ benzo)</td>
</tr>
<tr>
<td></td>
<td>as above</td>
</tr>
<tr>
<td></td>
<td>heavier sedation</td>
</tr>
<tr>
<td></td>
<td>airway adjuncts to hand</td>
</tr>
<tr>
<td></td>
<td>as orange</td>
</tr>
<tr>
<td></td>
<td>but delay</td>
</tr>
<tr>
<td></td>
<td>until lasted</td>
</tr>
<tr>
<td></td>
<td>await retrieval?</td>
</tr>
</tbody>
</table>
|                         | balance of minimal sedation & own airway | **HIGH**
|                         | vs GA/ETT        |
| **MEDIUM**               | **MEDIUM**       |
| intoxicated / disinhibited| low risk         |
| unpredictable            | restraint        |
| delusional with poor insight| longer acting agents | **HIGH**
| anxious +++              | 1:1 nursing      |
|                         | avoid drugs if possible orientation re assurance |
|                         | with 1:1 nursing |
|                         | as above         |
|                         | then ketamine    |
|                         | sedation         |
|                         | or RSI/ETT       |
|                         | as orange        |
|                         | but delay        |
|                         | until lasted     |
|                         | await retrieval? |
|                         | balance of minimal sedation & own airway | **HIGH**
|                         | vs GA/ETT        |
| **HIGH**                 | **HIGH**         |
| violence / weapons       | low risk         |
| physical threats         | restraint        |
| persecutory delusions around care | longer acting agents | **HIGH**
|  “big guy” you whom cannot restrain | 1:1 nursing      |
|                         | avoid drugs if possible orientation re assurance |
|                         | with 1:1 nursing |
|                         | as above         |
|                         | then ketamine    |
|                         | sedation         |
|                         | or RSI/ETT       |
|                         | as orange        |
|                         | but delay        |
|                         | until lasted     |
|                         | await retrieval? |
|                         | balance of minimal sedation & own airway | **HIGH**
|                         | vs GA/ETT        |

---

**ANALYSIS**

**LOW**

- thin, fit, fasted
- low risk
- mild anxious
- as above
- single agent antipsychotic
- as above
- heavier sedation
- as orange
- but delay
- until lasted
- await retrieval?
- balance of minimal sedation & own airway

**MEDIUM**

- intoxicated / disinhibited
- unpredictable
- delusional with poor insight
- anxious +++
- as above
- then ketamine sedation
- as orange
- but delay
- until lasted
- await retrieval?
- balance of minimal sedation & own airway

**HIGH**

- violence / weapons
- physical threats
- persecutory delusions around care
- “big guy” you whom cannot restrain
- as above
- then ketamine sedation
- or RSI/ETT
- as orange
- but delay
- until lasted
- await retrieval?
- balance of minimal sedation & own airway

---

**CONSIDER**

- thin, fit, fasted
- low risk
- mild anxious
- as above
- single agent antipsychotic
- as above
- heavier sedation
- as orange
- but delay
- until lasted
- await retrieval?
- balance of minimal sedation & own airway

---

**THERAPY**

- oral olanzapine 10-20mg stat and/or
- IMI midazolam 5-10mg and/or
- IMI ketamine 4mg/kg

---

**MINIMUM SEDATION MONITORING**

- SpO2, ECG, NIBP
- Consider ETCO2 via HM
- SUPPLEMENTAL OXYGEN AT ALL TIMES
- RFDS restraints or net, 45 degree head up to maximise SV and minimise aspiration risk
- CHECK BGL!
### RICHMOND AGITATION SEDATION SCALE

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMBATIVE</td>
<td>overtly combative, violent, immediate danger to self/others</td>
<td>+4</td>
</tr>
<tr>
<td>VERY AGITATED</td>
<td>pulls or removes tube(s), catheter(s), aggressive</td>
<td>+3</td>
</tr>
<tr>
<td>AGITATED</td>
<td>frequent non-purposeful movement, fights ventilator</td>
<td>+2</td>
</tr>
<tr>
<td>RESTLESS</td>
<td>anxious but movements not aggressive or vigorous</td>
<td>+1</td>
</tr>
<tr>
<td>ALERT &amp; CALM</td>
<td>Doctor or Nurse</td>
<td>0</td>
</tr>
<tr>
<td>DROWSY</td>
<td>Not fully alert, but sustained awakening to voice (eyes open &gt; 10s)</td>
<td>-1</td>
</tr>
<tr>
<td>LIGHT SEDATION</td>
<td>briefly awakens with eye contact to voice &lt; 10s</td>
<td>-2</td>
</tr>
<tr>
<td>MODERATE SEDATION</td>
<td>movement or eye opening to voice but no eye contact</td>
<td>-3</td>
</tr>
<tr>
<td>DEEP SEDATION</td>
<td>no response to voice, but movement or eye opening to physical stimulation</td>
<td>-4</td>
</tr>
<tr>
<td>UNROUSABLE</td>
<td>no response to voice or physical stimulation</td>
<td>-5</td>
</tr>
</tbody>
</table>

**Procedure**

(i) observe patient - patient is alert, restless, agitated or combative (0 to +4)

(ii) if not alert, state patient’s name and say to open eyes and look at speaker
-1 if awakens with sustained eye contact to voice > 10s to voice
-2 if awakens with eye contact to voice < 10s
-3 if moves or opens eyes to voice but no eye contact

(iii) if no response to voice, use physical stimulus (shoulder shake, trapezius squeeze, jaw thrust)
-4 if any movement to physical stimulation
-5 if no response to physical stimulation

**TARGET RASS is 0 to -3**

**AIRWAY EQUIPMENT and MONITORING must be available**

**1:1 NURSING, 10 minutely obs**

**LIAISE WITH RETRIEVAL SERVICE**
**TRANSFER INFORMATION**

Sometimes important details can get forgotten. I use the ABC approach to handover to retrieval team, as follows: "Thank God you’re here! OK, this is John Doe age 21 involved in a motor vehicle accident with prolonged extrication and transferred via ambulance to us. He needs transfer to a trauma centre for a laparotomy for internal bleeding. In terms of summary, here’s his ABC..."

<table>
<thead>
<tr>
<th>A - Airway</th>
<th>Intubated on arrival for GCS M3V1E1 - grade I view. Airway now patent, protected with size 8.5 ETT tube 22cm teeth and tied. Cervical collar in situ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B - Breathing</td>
<td>Paralysed with vecuronium and on volume control TV 600 RR 12 R sided HTX and a 34Fr intercostal catheter in place, drained 400ml blood. SpO2 96%</td>
</tr>
<tr>
<td>C - Circulation</td>
<td>Haemodynamically stable after 750ml crystalloid titrated to radial pulse in 250ml aliquots. HR 90 BP 100/70 Bleeding likely from HTX, abdomen and pelvis (binder on)</td>
</tr>
<tr>
<td>D - Disability/Drugs</td>
<td>M3V1E1 PEARLA initially, now M1V1E1 on propofol/vecuronium infusion.</td>
</tr>
<tr>
<td>E - Exposure</td>
<td>R HTX drained as above. Abdomen tense and tender in LUQ, suspect splenic injury. No other injuries on log roll, pelvic binder applied. Warm blankets and Bair hugger</td>
</tr>
<tr>
<td>F - Fluids</td>
<td>3 x 250ml crystalloid aliquots titrated to radial pulse (SBP 70) IDC in situ and drained 300ml clear urine</td>
</tr>
<tr>
<td>G - Gut</td>
<td>Last ate 7pm. NG passed and on free drainage.</td>
</tr>
<tr>
<td>H - Haematology</td>
<td>Hb 114 on iStat, INR 1.1 No ACoTS.</td>
</tr>
<tr>
<td>I - Infusions</td>
<td>Not needed vasopressors On propofol and vecuronium infusions for transport</td>
</tr>
<tr>
<td>J - JVP</td>
<td>Not elevated - no signs tPTX/tamponade.</td>
</tr>
<tr>
<td>K - Kelvin</td>
<td>Temp is 36 degrees with active warming</td>
</tr>
<tr>
<td>L - Lines</td>
<td>14G IV R wrist 8Fr rapid infuser L ACF</td>
</tr>
<tr>
<td>M - Micro</td>
<td>Has been given ADT</td>
</tr>
<tr>
<td>N - Notes/NOK</td>
<td>His notes are in this envelope, including copies of plain X-rays Next Of Kin (NOK) are aware and here are their contact details.</td>
</tr>
</tbody>
</table>

The above would take 90 seconds and is an ordered summary of the patient for handover.